

<<偏微分方程>>

图书基本信息

书名：<<偏微分方程>>

13位ISBN编号：9787510032967

10位ISBN编号：7510032962

出版时间：2011-4

出版时间：世界图书出版公司

作者：约斯特

页数：356

版权说明：本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问：<http://www.tushu007.com>

<<偏微分方程>>

内容概要

《偏微分方程(第2版)》是一部讲述偏微分方程理论的入门书籍。

全书以椭圆偏微分为核心，系统讲述了相关内容，涉及到不少非线性问题，如，最大值原理方法，抛物方程和变分法。

书中讲述了椭圆方程解的估计的主要方法，sobolev空间理论，弱解和强解，schauder估计，moser迭代。展示了椭圆，抛物和双曲解以及布朗运动，半群之间的关系。

《偏微分方程(第2版)》可以作为一年级的教程，在这新的版本中增加了反应-扩散方程和系统，新材料有neumann边值问题，poincaré不等式，以及一个新的证明，poisson方程解的holder规则等。

目次：以拉普拉斯方程为原型的二阶椭圆偏微分方程；最大值原理；存在性技巧：基于最大值原理的方法；存在性技巧：抛物方法.热方程；反应-扩散方程和系统；波方程以及与laplace的关系和热方程；热方程，半群和布朗运动；dirichlet原理，pde解的变分法；sobolev空间和 L^2 规范性理论；强解；schauder规范理论和连续性方法；moser迭代法和degiorgi和nash规范性定理。

读者对象：数学专业高年级的本科生，研究生和相关科研人员。

<<偏微分方程>>

书籍目录

- introduction: what are partial differential equations?
- 1. the laplace equation as the prototype of an elliptic partial differential equation of second order
 - 1.1 harmonic functions. representation formula for the solution of the dirichlet problem on the ball (existence techniques 0)
 - 1.2 mean value properties of harmonic functions. subharmonic functions. the maximum principle
- 2. the maximum principle
 - 2.1 the maximum principle of e. hopf
 - 2.2 the maximum principle of alexandrov and bakelman
 - 2.3 maximum principles for nonlinear differential equations
- 3. existence techniques i: methods based on the maximum principle
 - 3.1 difference methods: discretization of differential equations
 - 3.2 the perron method
 - 3.3 the alternating method of h.a. schwarz
 - 3.4 boundary regularity
- 4. existence techniques ii: parabolic methods. the heat equation
 - 4.1 the heat equation: definition and maximum principles
 - 4.2 the fundamental solution of the heat equation. the heat equation and the laplace equation
 - 4.3 the initial boundary value problem for the heat equation
 - 4.4 discrete methods
- 5. reaction-diffusion equations and systems
 - 5.1 reaction-diffusion equations
 - 5.2 reaction-diffusion systems
 - 5.3 the turing mechanism
- 6. the wave equation and its connections with the laplace and heat equations
 - 6.1 the one-dimensional wave equation
 - 6.2 the mean value method: solving the wave equation through the darbox equation
 - 6.3 the energy inequality and the relation with the heat equation
- 7. the heat equation, semigroups, and brownian motion
 - 7.1 semigroups
 - 7.2 infinitesimal generators of semigroups
 - 7.3 brownian motion
- 8. the dirichlet principle. variational methods for the solution of pdes (existence techniques iii)
 - 8.1 dirichlet's principle
 - 8.2 the sobolev space $w_{1,2}$
 - 8.3 weak solutions of the poisson equation

<<偏微分方程>>

- 8.4 quadratic variational problems
- 8.5 abstract hilbert space formulation of the variational problem. the finite element method
- 8.6 convex variational problems
- 9. sobolev spaces and L^2 regularity theory
 - 9.1 general sobolev spaces. embedding theorems of sobolev, morrey, and john-nirenberg
 - 9.2 L^2 -regularity theory: interior regularity of weak solutions of the poisson equation
 - 9.3 boundary regularity and regularity results for solutions of general linear elliptic equations
 - 9.4 extensions of sobolev functions and natural boundary conditions
 - 9.5 eigenvalues of elliptic operators
- 10. strong solutions
 - 10.1 the regularity theory for strong solutions
 - 10.2 a survey of the L^p -regularity theory and applications to solutions of semilinear elliptic equations
- 11. the regularity theory of schauder and the continuity method (existence techniques iv)
 - 11.1 C^α -regularity theory for the poisson equation
 - 11.2 the schauder estimates
 - 11.3 existence techniques iv: the continuity method
- 12. the moser iteration method and the regularity theorem of de giorgi and nash
 - 12.1 the moser-harnack inequality
 - 12.2 properties of solutions of elliptic equations
 - 12.3 regularity of minimizers of variational problems
- appendix. banach and hilbert spaces. the L^p -spaces
- references
- index of notation
- index

<<偏微分方程>>

版权说明

本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问:<http://www.tushu007.com>